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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/637,520	08/10/2000	Thomas Michael Walley	10001892-1	7579

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EXAMINER

PERUNGAVOOR, SATHYANARAYA V

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 08/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/637,520

Applicant(s)

WALLEY ET AL.

Examiner

Sath V. Perungavoor

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant(s) Response to Official Action

- [1] The response filed on January 28, 2005 has been entered and made of record.

Response to Arguments

- [2] Applicant's arguments filed on January 28, 2005 have been fully considered but they are not persuasive. Examiner's response to the presented arguments follows below.

Objection to the Claims

Summary of Arguments:

Applicants amend the objected claim to overcome the objection. Applicants request the withdrawal of the objection.

Examiner's Response:

Agreed. Examiner withdraws the previously made objection.

Claim Rejections - 35 USC § 103

Summary of Arguments:

Regarding claim 20:

- Applicants assert that the amended claim overcomes the rejection.

Regarding claims 1, 4, 5, 9-12, 15, and 17-19:

1. Applicants assert that Blalock fails to meet the requirement of analogous art. Applicants present the following arguments to support that assertion.

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- a. Blalock reference is not in same field of endeavor.
 - b. Blalock reference is not pertinent to same problem solving area.
2. Applicants assert that there is no motivation to combine Blalock and Raynal.
3. Applicants assert that the Examiner used impermissible hindsight in view of a specification citation in the official action.

Regarding claim 3:

1. Applicants assert that Bohn fails to meet the requirement of analogous art. Applicants present the following arguments to support that assertion.
 - a. Bohn reference is not in same field of endeavor.
 - b. Bohn reference is not pertinent to same problem solving area.

Regarding claims 13, 14 and 16:

1. Applicants assert that the combination of Raynal, Blalock and Akizuki does not disclose “the fingerprint imager is implemented in a stand-alone unit and wherein the fingerprint imager further comprises: a) a capacitive sensor having a surface along which a finger is moved; and b) an assembly for housing the capacitive sensor”.

Regarding claims 6-8:

1. Applicants assert that the combination of Raynal, Blalock and Brownlee does not disclose the limitation of the independent claim, claim 1, “a) an imaging array having a plurality of sensors arranged along a first axis for capturing a sub-image of the fingerprint at one time; wherein the fingerprint is moved with respect to the imaging array in a direction that is

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generally perpendicular to the first axis; and b) a mechanism for determining a change in the position of the fingerprint with respect to time and controlling the capture of the imaging array”.

Accordingly, Applicants request the withdrawal of the rejections.

Examiner's Response:

Regarding claim 20:

Agreed. Examiner withdraws the previously made rejection. New grounds of rejection are made in view the applicants amendment.

Regarding claims 1, 4, 5, 9-12, 15, and 17-19:

Examiner respectfully disagrees.

Item 1:

In response to applicants' argument that Blalock is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Blalock is in the same problem solving area, the detection of movement/navigation. Raynal discloses a detection of movement through a mouse and Blalock performs the same movement detection through the use of image correlation.

Furthermore, the Applicants' specification filed on August 10, 2000 provides evidence contrary to their current assertions. On Page 8, Lines 17-20, applicants' not only cite the Blalock reference as pertinent prior art, but also incorporate Blalock's movement detection method into their instant invention. This glaringly shows that the applicants considered Blalock to be relevant to the same problem solving area.

Following is the relevant section of the specification [Specification, Page 8 Lines 17-20]:

U.S. Pat. No. 5,729,008, entitled "Method and Device for Tracking Relative Movement by Correlating Signals from an Array of Photoelements," which is incorporated by reference herein, describes in greater detail the operation and an exemplary implementation of the navigation engine 420 and the NSA 410.

Item 2:

In response to applicants' argument that there is no motivation to combine, it would be glaringly evident to those skilled in the art that the mechanical movement detection method of Raynal is inferior to that of Blalock's image correlation based movement detection. First, mechanical parts are inherently prone to wear and over time the accuracy of Raynal's movement detection would be less accurate. Second, mechanical parts would need maintenance (i.e. calibration, lubrication or replacement of the mouse), while Blalock's method would not require such maintenance.

Item 3:

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Examiner contends that the citation in the Page 5 of the official action references to the specification, page 8, lines 17-20. To clarify on the record, this citation was intended provide support for same problem solving area criterion for the Blalock reference.

Regarding claim 3:

Examiner respectfully disagrees.

Item 1:

In response to applicant's argument that Bohn is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Bohn in the same problem solving area, placement of positioning and imaging sensors.

Regarding claims 13, 14 and 16:

Examiner respectfully disagrees.

Item 1:

Examiner directs the applicants to Column 2 Lines 17-20 and 62-67 of the Akizuki reference, where the claim limitations are glaringly shown.

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Regarding claims 6-8:

Examiner respectfully disagrees.

Item 1:

Examiner directs the applicants to Column 3 Lines 31-37 and 48-50, Column 4 Lines 7-14 and Figures 1 and 2 of the Raynal reference, where the claim limitations are glaringly shown.

Accordingly, Examiner maintains the rejections.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

[3] Claims 1, 4, 5, 9-12, 15, and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raynal et al. (US 6,643,389) in view of Blalock et al. (US 5,729,008).

Regarding claim 1, Raynal discloses a fingerprint imager for capturing an image of a fingerprint including a single sensor integrated circuit having an imaging array 13 having a) an imaging array having a plurality of sensors arranged along a first axis (Figures 1 and 2) for capturing a sub-image of the fingerprint at one time (Col. 3, lines 31-37), wherein the fingerprint is moved with respect to the imaging array in a direction that is generally

perpendicular to the first axis (Col. 3, lines 48-50; Figures 1 and 2); and b) a mechanism 19 for determining a change in the position of the fingerprint with respect to time and controlling the image capture of the imaging array (Col. 4, lines 7-14) that includes b1) a navigation sensor 19 for capturing navigation information of a portion of the fingerprint as the fingerprint moves with respect to the navigation sensor (Col. 3, lines 48-60); and b2) a navigation circuit 27, coupled to the navigation sensor, for controlling when the navigation sensor captures navigation information for receiving the information and based thereon for determining the amount of movement of fingerprint (Col. 4, lines 1-14).

Raynal discloses controlling the image capture of the imaging array including determining the amount of movement of the fingerprint (Col. 4, lines 7-14), but does not disclose capturing navigation images or specify determining the amount of movement along a first and second axis. However, Blalock et al. ("Blalock") discloses that it is well known to determine navigation information using images rather than using a mechanically movable means (Col. 2, lines 6-19). Blalock discloses an imaging array 22 as well as a navigation array 24 and navigation circuit (Figures 2 and 3) in an imaging device wherein the navigation array captures navigation images and the navigation circuit determines the amount of movement along a first axis and a second axis that is perpendicular to the first axis (Figure 1; Col. 5, lines 10-19; Col. 8, lines 21-30).

Raynal and Blalock are combinable because they are from similar problem solving area of capturing an image. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified determining fingerprint movement means disclosed by Raynal to include capturing images to determine movement information along a first and second axis. The motivation for doing so would have been because it replaces a

mechanically movable means which reduces the maintenance required for the imager. It is further submitted that the Applicant has disclosed that Blalock describes an exemplary implementation of the navigation engine and the navigation sensor array (Specification, page 8, lines 17-20). Therefore, it would have been obvious to combine Raynal with Blalock to obtain the invention as specified in claim 1.

Regarding claim 4, the arguments analogous to those presented above in claim 1 are applicable to claim 4. Blalock discloses the imaging array 22 is separate from the navigation array 24 (Figure 2).

Regarding claim 5, Raynal discloses a plurality of sensors of the imaging array is capacitive-type sensors (Col. 3, lines 38-47). Raynal does not disclose the type of plurality of sensors of the navigation array. However, Blalock discloses the navigation array including a plurality of optical-type sensors (Col. 8, lines 30-53). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the mechanism for determining a change in the position of the fingerprint disclosed by Raynal to include specifying a type of the plurality of sensors of the navigation array. The motivation for doing so would have been because the types of sensors are well known in the art and routinely utilized for navigation. Therefore, it would have been obvious to combine Raynal with Blalock to obtain the invention as specified in claim 5.

Regarding claim 9, Raynal discloses the finger being moved along a physical surface (Col. 3, lines 48-50).

Regarding claim 10, Raynal does not appear to specify the pixel size of the sensors of the imaging array is different from the navigation array. However, it would have been an obvious matter of design choice to specify different pixel size of the sensors in both the imaging array and the navigation array because it is well known in the art to choose pixel size according to the precision needed.

Regarding claim 11, Raynal discloses the pixel size of the sensors of the imaging array having the dimensions of about 50 microns (Col. 3, lines 38-47), but does not specify the pixels of the sensors of the navigation array having dimensions of about 20 microns. However, it would have been an obvious matter of design choice to specify the pixel size of the sensors in the navigation array having smaller dimensions because it will yield higher precision in determining the change in position.

Regarding claim 12, Raynal discloses the resolution of the sensors of the imaging array and the navigation array is about 500 dpi (Col. 3, lines 38-60).

Regarding claim 15, Raynal discloses employing the change in position to selectively control when the imaging array captures the sub-images (Col. 4, lines 1-14), thereby an imaging array strobe generator. Raynal further discloses receiving the sub-images and the movement information for each sub-image relative to a previous sub-image and based thereon generates a composite image of the fingerprint (Col. 5, lines 37-46) and analyzing the composite image to generate minutia and compares the generated minutia to previously stored minutia (Col. 4, lines 30-39), and grants access to a resource if the generated minutia

matches one of the previously stored minutia (Col. 1, lines 13-19). Raynal does not appear to specify including a processor. However, Blalock teaches that it is known to include a processor to generate a composite image of the object based on the sub-images and the movement information. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the generation of composite image disclosed by Raynal to include using a processor. The motivation for doing so would have been because it is well known in the art to use stitching software to create an electronic image of the object. Therefore, it would have been obvious to combine Raynal with Blalock to obtain the invention as specified in claim 15.

Regarding claim 17, Raynal discloses a rectangular imaging array sensor (Col. 3, lines 28-47). While Raynal does not specify using a 1 by N sensor array, it would have been obvious in light of Raynal's disclosure to have modified the rectangular sensor array to a 1 by N sensor array because it require less space and thereby minimize the size.

Regarding claim 18, Raynal does not appear to disclose a P by Q navigation sensor array. However, Blalock discloses a navigation array as a P by Q sensor array (Figure 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the mechanism for determining a change in the position disclosed by Raynal to include a P by Q navigation sensor array because it allows for the change in position to be detected in two directions.

Regarding claim 19, Raynal discloses an imager for capturing an image of an object 17 including a surface having an axis (Figure 1), wherein the fingerprint is moved in a first direction relative to the axis of the surface; an imaging sensor array having a plurality of sensors arranged along a first axis for imaging a portion of a fingerprint at one time in response to an asserted imaging sensor array signal (Col. 3, lines 33-47; Col. 4, lines 1-14); wherein the first axis is generally perpendicular to the first direction of the movement of the fingerprint (Col. 3 Lines 48-50; Figures 1 and 2); c) a navigation sensor 19 for obtaining movement information of the fingerprint in response to an asserted navigation sensor strobe signal (Col. 3, lines 48-60; Col. 4, lines 1-14); and a navigation circuit 27, coupled to the navigation sensor, for receiving navigation information and based thereon determining the amount of movement of a fingerprint (Col. 4, lines 1-14); wherein the imager is integrated in a single chip (Col. 4, lines 30-39).

Raynal discloses determining the amount of movement of the fingerprint (Col. 4, lines 7-14), but does not appear to recognize a navigation circuit for receiving images and determining the amount of movement in a first and second direction. However, Blalock et al. ("Blalock") discloses that it is well known to determine navigation information using images rather than using a mechanically movable means (Col. 2, lines 6-19). Blalock discloses an imaging array 22 as well as a navigation array 24 and navigation circuit (Figures 2 and 3) in an imaging device wherein the navigation array captures navigation images and the navigation circuit determines the amount of movement along a first axis and a second axis that is perpendicular to the first axis (Figure 1; Col. 5, lines 10-19; Col. 8, lines 21-30).

Raynal and Blalock are combinable because they are from similar problem solving area of capturing an image. At the time of the invention, it would have been obvious to a

person of ordinary skill in the art to have modified determining fingerprint movement means disclosed by Raynal to include capturing images to determine movement information along a first and second axis. The motivation for doing so would have been because it replaces a mechanically movable means which reduces the maintenance required for the imager. It is further submitted that the Applicant has disclosed that Blalock describes an exemplary implementation of the navigation engine and the navigation sensor array (Specification, page 8, lines 17-20). Therefore, it would have been obvious to combine Raynal with Blalock to obtain the invention as specified in claim 19. Note, the claim language recites both an object (lines 2, 8) and a fingerprint (lines 5, 11). As claimed, the object is not necessarily the fingerprint.

Regarding claims 20 and 21, all claimed limitations are set forth and rejected as per discussion for claims 1, 15 and 17.

[4] Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raynal et al. (US 6,643,389) and Blalock et al. (US 5,729,008) as applied to claim 1 above, and further in view of Bohn et al. (US 6,207,945).

Regarding claim 3, Raynal and Blalock do not appear to recognize the imaging array and the navigation array sharing at least one sensor. However, Bohn teaches that it is known for the imaging array and the navigation array to share at least one sensor (Figure 7; Col. 14, lines 10-14). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the imaging array and the navigation array disclosed

by Raynal and Blalock to include sharing at least one sensor. The motivation for doing so would have been because it allows the navigation array to be integrated into the imaging array thereby reducing the size of the imager and alleviating problems associated with locating the navigation sensors a distance from the imaging array (Col. 8, lines 45-53).

Therefore, it would have been obvious to combine Raynal and Blalock with Bohn to obtain the invention as specified in claim 3.

[5] Claims 13, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raynal et al. (US 6,643,389) and Blalock et al. (US 5,729,008) as applied to claim 1 above, and further in view of Akizuki (US 6,360,004).

Regarding claim 13, Raynal does not appear to recognize the imager as a stand-alone unit. However, Akizuki teaches that it is known to implement a fingerprint sensor as a touch pad, or a stand-alone unit, wherein the fingerprint imager further comprises a capacitive sensor (Col. 2, lines 62-67) having a surface along which a finger is moved 4 and an assembly for housing the capacitive sensor (Col. 2, lines 17-20). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the imager disclosed by Raynal and Blalock to be implemented as a stand-alone unit. The motivation for doing so would have been because it is suitable for portable use. Therefore, it would have been obvious to combine Raynal and Blalock with Akizuki to obtain the invention as specified in claim 13.

Regarding claim 14, the arguments analogous to those presented above for claim 13 are applicable to claim 14. Note, Akizuki discloses a touch pad, thereby a PC peripheral.

Regarding claim 16, the arguments analogous to those presented above for claim 13 are applicable to claim 16. Akizuki discloses a processor 5 (Figure 1) and a cursor control software which when executing on the processor receives the movement information from the navigation engine and uses the movement information to control the cursor (Col. 3, lines 47-51). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the imager disclosed by Raynal and Blalock to include the cursor control. The motivation for doing so would have been because it provides a dual function thereby eliminating the need for two separate sensors. Therefore, it would have been obvious to combine Raynal and Blalock with Akizuki to obtain the invention as specified in claim 16.

[6] Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raynal et al. (US 6,643,389) and Blalock et al. (US 5,729,008) as applied to claim 1 above, and further in view of Brownlee (US 6,282,303).

Regarding claim 6, Raynal does not recognize a stand-alone unit including optics. However, Brownlee teaches that it is known to include a fingerprint imager implemented in a stand-alone unit 910 in Figure 9 (Col. 2, lines 28-29) including optics for focusing light onto the surface (Abstract, lines 3-5) and an optics assembly 211 for housing the optics (Figure 2). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the fingerprint imager disclosed by Raynal and Blalock to a stand-alone unit including optics. The motivation for doing so would have been because it is well known in the art and provides a compact device suitable for portable use. Therefore,

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it would have been obvious to combine Raynal and Blalock with Brownlee to obtain the invention as specified in claim 6.

Regarding claim 7, the arguments analogous to those presented above in claim 6 are applicable to claim 7. Note, Brownlee discloses the fingerprint imager implemented in a PC peripheral (Figure 9).

Regarding claim 8, the arguments analogous to those presented above for claim 7 are applicable to claim 8. Brownlee discloses the PC peripheral device as a mouse, thereby a cursor pointing device (Figure 9).

Conclusion

[7] **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


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Contact Information

[8] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Sath V. Perungavoor whose telephone number is (571) 272-7455. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Bhavesh M. Mehta whose telephone number is (571) 272-7453, can be reached on Monday to Friday from 9:00am to 5:00pm. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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Date: August 9, 2005


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